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AUTHOR Lichtenstein, Robert
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ABSTRACT

The general question of how well parents' reports about their preschool children predict school performance was addressed in this study. In addition, the effects of several population characteristics--sex, socioeconomic status (SES), child's age, and birth order--upon the validity of parent reports were investigated. Parents of 391 preschool children aged 49 to 64 months completed a brief developmental inventory as part of a preschool screening program operated by an urban school district. The 28-item developmental inventory assessed adaptive behavior and language development. In addition, preschool children were administered the Minneapolis Preschool Screening Instrument. Teacher ratings of kindergarten performance the following year provided criterion data to validate the screening measures. Correlations with the overall teacher rating (the mean of nine ratings) were .40 for the adaptive behavior scale and .57 for the language scale. Validity figures for the development inventory were significantly higher for low-SES than for high-SES children, for older children (57 to 64 months) than for younger children (49 to 56 months), and for firstborn children than for younger siblings. No effects were found by sex. While a positive relationship between parent reports of developmental functioning and early school performance was clearly established, validity levels did not justify use of parent information as a sole source of preschool screening information. (Author/MP)

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Predicting School Performance of Preschool Children from Parent Reports

Robert Lichtenstein

University of Delaware

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This paper expands upon the poster presented at the Annual Convention of the American Psychological Association, August 1982, Washington, D.C. Comments on this paper are invited. Please address correspondence to author, Department of Educational Studies, University of Delaware, Newark, Delaware 19711.

Abstract

Parents of 391 preschool children ages 49 to 64 months completed a brief developmental inventory as part of a preschool screening program operated by an urban school district. The 28-item developmental inventory assessed adaptive behavior and language development. In addition, preschool children were administered the Minneapolis Preschool Screening Instrument. Teacher ratings of kindergarten performance the following year provided criterion data to validate the screening measures. Correlations with the overall teacher rating (the mean of nine ratings) were .40 for the adaptive behavior scale and .57 for the language scale. Validity figures for the developmental inventory were significantly higher for low SES than for high SES children, for older children (57 to 64 months) than for younger children (49 to 56 months), and for first-born children than for younger sibs. No effects were found by sex. While a positive relationship between parent reports of developmental functioning and early school performance was clearly established, validity levels did not justify use of parent information as a sole source of preschool screening information.

Predictive Validity of Parent Reports in Preschool Screening

What could be more logical than asking parents to supply information about their children's development and behavior? After all, parents observe their children at great length in a variety of different situations. Their observations cover a broad range of developmental areas, including self-help skills, social competence, and emotional development, that cannot be adequately assessed in time-limited testing sessions.

The case for parent reports is especially compelling at the preschool age level. The need to obtain accurate and comprehensive information about young children has been heightened by Public Law 94-142's mandate to identify and serve all children with special educational needs--which in most states applies to children beginning at age three or earlier. The young child may present atypical behavior in a novel testing situation with an unfamiliar adult and, while the strategy of having preschool teachers initiate referrals based on their observations in a naturalistic (and relatively standardized) setting has merit, the majority of preschool age children are not enrolled in nursery schools or preschool centers. Parent report has become increasingly attractive as a cost-effective means of obtaining a broad range of relevant developmental screening information.

A number of parent report measures suitable for preschool children have been developed in recent years in response to this interest and need: the Minnesota Child Development Inventory (Ireton & Thwing, 1972), the Developmental Profile (Alpern & Boll, 1972) and Developmental Profile II (Alpern, Boll, & Shearer, 1980), the Denver Prescreening Developmental Questionnaire (Frankenburg, van Doorninck, Liddell, & Dick, 1976), the

Personality Inventory for Children (Wirt, Lachar, Klinedinst, & Sear, 1977), the Minnesota Preschool Inventory (Ireton & Thwing, 1979), and the Child Behavior Checklist (Achenbach, 1978; Achenbach & Edelbrock, 1981). Still, concerns are frequently raised about the objectivity and accuracy of parent reports. How comparable are judgments by different parents, given that some are better observers than others, and most have a limited sample of children upon which to base judgments? Do parents tend to be biased in reporting on their children due to their own personal needs, such as wanting their children to reflect favorably upon themselves (leading to positive bias), or seeking special services for their children (leading to negative bias)?

Researchers (Graham & Rutter, 1968; Novick, 1966) have shown that structured interviews or questionnaires addressing current and observable behaviors that involve low inference on the part of raters yield more reliable data. However, the validity and cost-effectiveness of using parent information to supplement or replace direct testing and other preschool screening measures has not been clearly demonstrated. Alpern and Boll (1975) found that mothers' ratings on the Developmental Profile for children ages 3 months to 12 years corresponded with approximately 85% agreement to actual performance on items that could be verified by direct testing. The authors noted, however, that these results were obtained in a research situation in which mothers had little cause to distort their responses. Ireton, Shing-Lun, and Kampen (1981) found that parent reports of preschool children's self-help, social, and affective development had little predictive value in predicting early school performance, while reports of cognitive functioning were highly significant.

A related question concerns whether particular circumstances, child variables, or parent characteristics account for differences in the validity of parent information. Are parents more accurate in their reports as a function of the child's sex or age? Is parent information about older sibs more trustworthy, in that parents may observe their first-born child's development more closely; or less trustworthy, since parents may become more knowledgeable about child development through raising the oldest child? Are there relationships between SES level and value of parent report data? Research to date has shown slight trends towards parent ratings having greater validity for females than for males (Edelbrock, 1982; Stevenson, Parker, Wilkinson, Hegion, & Fish, 1976), and towards better educated parents (i.e., mothers) providing more valid data (Pyles, Stolz, & MacFarlane, 1935; Sturner, 1980).

This study addresses the general question of how well parent reports about their preschool children predict school performance. In addition, the effects of several population characteristics--sex, SES, child's age, and birth order--upon the validity of parent reports were investigated.

Method

In this study, parent reports provided screening data on 391 urban area preschool children aged 49 to 64 months. The sample was composed of 223 males and 168 females. For analyzing SES differences, the sample was divided on the basis of occupational level and income data by census tract (Polk, 1978) into a low SES group of 170 children living in lower and lower-middle class areas, and a high SES group of 221 children living in middle and upper-middle class areas. Approximate racial breakdown of the sample was 85% White, 7% Black, 3% Native American, 2% Asian American, and 3% other or unknown.

Parents of the children in the sample completed a brief developmental inventory as part of a preschool screening program in a large Midwestern city. The inventory was compiled by school district personnel due to the lack of acceptable commercial measures when the study was initiated in 1977. The developmental inventory consisted of 12 self-help items (e.g., "Is your child able to wash face and hands unassisted?"), 12 social-emotional items (e.g., "Does your child join in play with other children?" "Is your child able to handle new situations without unusual fears?"), and four language items (e.g., "Is your child able to use four word phrases/sentences?"). The four response options to each question were scored as follows: "yes"--2 points, "sometimes"--1 point, "no" or "don't know"--0 points. The developmental inventory was completed by the child's mother or stepmother in 338 cases, and by the father or stepfather in 46 cases. For the remaining seven cases, information was supplied by both parents, a grandparent, or unrelated primary caretaker.

A brief screening measure of cognitive, language, and perceptual functioning, the Minneapolis Preschool Screening Instrument (MPSI) (Lichtenstein, 1980) was also administered.

Teacher ratings of kindergarten performance the following year provided criterion data to validate the screening measures. Teachers rated children on a 1-to-4 scale in each of nine areas: learning habits, reading readiness, speech, gross motor, social-emotional development, pre-academic skills, language development, fine motor/perceptual motor, and expected readiness for first grade. Also, ratings over the nine areas were averaged to yield an overall teacher rating. The ratings were accompanied by descriptions which reflected the need for special assistance in the areas

evaluated, and "normative guidelines" as to the percentage of kindergarten children who would expectedly fall into each category were also provided, as follows:

1 - Severe problem (5-10%): Child needs special educational planning in order to acquire school-related skills.

2 - Mild problem (15-25%): Child could benefit from some special assistance.

3 - Not a problem (60-75%): Child is functioning within normal kindergarten expectations

4 - Definite strength (5-15%): Child is functioning clearly above average.

In analyzing data, a rating of 4, which was selected in approximately 18% of all ratings, was recoded as equal to a rating of 3 so that only differences between normal and problematic level school performance would be reflected.

[Placement in special educational programs was not used as a criterion measure for several reasons: (1) screening measure results contributed to early placement decisions, thereby creating a confound with this criterion, (2) kindergarten teachers, often sensitive to issues about early labeling of children, varied greatly in their tendency to refer children for special educational services, and (3) other sources of special assistance (e.g., Title I personnel, classroom aides) were available as an alternative to special education.]

The screening program ran continuously throughout the school year prior to the children's kindergarten entry. Since teacher ratings were obtained in the spring of the kindergarten year, the prediction interval ranged from one to one-and-a-half years.

Results and Discussion

Internal consistency reliability of the developmental inventory was computed using coefficient alpha. Reliability coefficients were .64 for the self-help scale, .70 for the social scale, .75 for the language scale, and .79 for total score. The self-help and social scales were combined because (1) they yielded a similar pattern of validity coefficients, and (2) factor analyses did not support their dimensional independence. This combined adaptive behavior scale of 24 items had a reliability coefficient of .76.

In analyzing SES, four different dichotomized variables were considered: SES (as described earlier), age at time of screening (dividing at the median of 56-1/2 months), sex, and birth order (i.e., whether or not a child was the oldest sib). As shown in Table 1, statistically significant differences between subgroups on developmental inventory scores were found for sex and SES, but not for age and birth order. Lower and more variable scores were obtained by males than by females, and by low SES children than by high SES children.

On the criterion measure, teacher ratings for high SES children were significantly higher ($p < .01$) than for low SES children for all nine rating areas and for the overall rating. Significant sex differences at $p < .05$ were found for all rating areas except one (speech), with females rated higher than males. In four areas and on overall rating, younger sibs were rated significantly higher ($p < .05$) than older sibs. No group differences were found by age.

Correlational predictive validity results are presented in Table 2. Moderate correlations were obtained between the developmental inventory

scales and overall teacher rating: .40 for the adaptive behavior scale, .57 for the language scale, and .49 for the total inventory score. The four-item language scale had higher validity coefficients than either the adaptive behavior scale or total inventory score for all rating areas except three--gross motor, fine motor/perceptual, and social-emotional development. However, the developmental inventory yielded lower validity figures than the Minneapolis Preschool Screening Instrument (MPSI) in predicting teacher ratings in all areas except speech. Multiple correlation coefficients reflecting the combined predictive power of the adaptive behavior scale, the language scale, and the MPSI indicated only limited advantages of adding a brief parent questionnaire to a standardized screening test to predict early school performance.

Comparative validity of parent report and screening test results across subgroups (sex, SES, age at screening, and birth order) in predicting five representative ratings is shown in Table 3. Validity coefficients for the MPSI were included to help distinguish whether group differences in validity are a function of the parent report method or due to differential predictability of the groups.

No consistent pattern of differences in validity coefficients between males and females was evident. Since males had greater variance on both screening measures and on teacher ratings, higher correlations for males might have been expected. However, the wider range of scores for males appears to have been offset by greater predictability of females, resulting in fairly similar correlations.

Parent reports were found to have higher validity coefficients for low SES than for high SES children. A similar pattern was found for the MPSI.

To some degree, this was a function of the wider dispersion of scores by low SES children on both screening measures and on the criterion measure. After correcting for restriction of range (McNemar, 1949), validity coefficients were generally equal or slightly higher for the low SES group. Thus, even accounting for the statistical artifact introduced by unequal variances, the pattern of parent information having greater validity at higher SES levels was not supported.

Parent reports yielded higher validity coefficients for older children (ages 4-9 to 5-4) than for younger children (ages 4-1 to 4-8). The older subgroup had correlations with the overall teacher rating of .48 for the adaptive behavior scale and .70 for the language scale, compared to .27 and .34, respectively, for the younger subgroup. The same trend by age range was obtained for the MPSI. The relationship between validity and age is not surprising. First, the average prediction interval (from screening to kindergarten ratings) was shorter for the older group by an average of 2.4 months. Second, age differences for developmental inventory validity may be due to the "problem orientation" of the criterion measure, i.e., in predicting school problems, failure to pass developmental inventory items at age five is more diagnostic than failures at age four-and-one-half.

Analysis of birth order effects showed that validity coefficients were higher for oldest sibs than for younger sibs with the developmental inventory language scale and the MPSI. The fact that these group differences were greater for the MPSI than for the language scale indicates that parents' greater knowledge of their first-born does not explain the pattern. One might posit instead that cognitive functioning is more directly related

to school performance for oldest sibs, whereas additional factors play a greater role for younger sibs.

Conclusion

The developmental inventory yielded correlations ranging from .25 to .57 in predicting teacher ratings of kindergarten performance. Although the brevity of the developmental inventory may have had a limiting effect upon validity, the magnitude of these correlations is comparable to that obtained by Ireton, Shing-Lun and Kampen (1981) in predicting kindergarten performance with a longer parent report measure. Results obtained in this study and by Ireton et al. (1981) were also similar in that parent information about cognitive areas of development (e.g., language, concept knowledge, memory) had greater validity than affective and adaptive behavior data in predicting successful school functioning. The impressive validity of the language scale, composed of only four items, suggests that this is a content area that merits greater emphasis in parent reports for preschool screening.

While validity rates for the parent report measure were promising, study results did not support the practice of using parent information as a substitute for direct testing or as a sole source of preschool screening information. Parent reports appear to have value for "pre-screening," in advance of other assessment data, but may fail to add significantly to a battery of screening information, as suggested by the multiple regression analyses.

Perhaps the greatest value of parent information is of a clinical nature, and not reflected in the data analyses. Information provided by parents reveals the nature of their concerns about their children and the

manner in which they interpret their children's behavior. This may be critical to school professionals as they interview parents or provide them with feedback. Also, involving parents in the assessment process can be an invaluable first step towards engaging them in educational planning for their children. Therefore, the value of parent report data should not be discounted simply on the basis of statistical comparisons to screening tests.

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FOOTNOTES

Robert Lichtenstein is Assistant Professor and Coordinator of the School Psychology Program, Department of Educational Studies, University of Delaware, Newark. He has been an active researcher in the area of development and evaluation of preschool screening procedures, and has served as a consultant to school districts implementing early identification programs.

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Table 1. Developmental inventory results by sample characteristics

Group	N	Adaptive Behavior $\bar{X}$	S.D.	t	Language $\bar{X}$	S.D.	t	Total $\bar{X}$	S.D.	t
Total sample	391	43.1	4.2		7.5	1.2		50.5	4.7	
SEX										
Males	223	42.1	4.7	26.15**	7.3	1.4	12.78**	49.4	5.3	29.11**
Females	168	44.3	3.1		7.7	0.8		52.0	3.4	
SES										
Low SES	170	42.5	4.9	5.68*	7.3	1.5	9.40**	49.7	5.7	8.10**
High SES	221	43.5	3.4		7.6	0.9		51.1	3.8	
AGE										
49-56 mos.	177	43.0	4.0	0.06	7.5	0.9	1.29	50.5	4.3	0.00
57-64 mos.	214	43.1	4.3		7.4	1.3		50.5	5.2	
OLDEk SIBS										
None	187	42.8	4.7	1.30	7.4	1.3	1.19	50.2	5.5	1.60
1 or more	204	43.3	3.6		7.5	1.0		50.8	4.0	

*$p < .05$
**$p < .01$

Table 2. Predictive validity of screening measures

	Teacher Ratings									
	Learning Habits	Reading Readiness	Speech	Gross Motor	Social/ Emotional Development	Pre-Academic Skills	Language Development	Fine Motor/ Perceptual	Expected Readiness for First Grade	Overall Rating (Average 1-9)
Developmental inventory										
Adaptive behavior	.32	.27	.26	.31	.26	.32	.30	.34	.35	.40
Language	.42	.50	.57	.25	.27	.53	.49	.34	.49	.57
Total	.38	.36	.37	.33	.29	.41	.38	.37	.43	.49
MPSI	.64	.69	.43	.38	.41	.73	.56	.48	.70	.75
Multiple R	.64	.70	.58	.42	.42	.74	.60	.50	.71	.77

Note: N=391

All correlations significant at $p < .001$

Table 3. Selected validity coefficients by subgroup

	Measure/subgroup	Reading readiness	Gross motor	Social-emotional development	Language development	Overall rating
	Inventory: Adaptive beh.					
	Males (N=223)	.30*	.28	.25	.30	.39
	Females (N=168)	.11*	.29	.17	.23	.29
By sex	Inventory: Language					
	Males	.47	.19*	.28	.49	.54
	Females	.53	.38*	.13	.47	.59
	MPSI					
	Males	.68	.34	.43	.55	.72
	Females	.71	.45	.31	.59	.80
	Inventory: Adaptive beh.					
	Low SES (N=170)	.33*	.39**	.28	.31	.45*
	High SES (N=221)	.10*	.13**	.17	.23	.24*
By SES	Inventory: Language					
	Low SES	.58**	.25	.29	.55**	.61**
	High SES	.23**	.18	.15	.30**	.41**
	MPSI					
	Low SES	.77**	.45**	.46*	.61**	.81**
	High SES	.43**	.13**	.23*	.35**	.49**

Table 3, cont'd. Selected validity coefficients by subgroup

	Measure/subgroup	Reading readiness	Gross motor	Social-emotional development	Language development	Overall rating
By age	Inventory: Adaptive beh.					
	Age 4-1 to 4-8 (N=177)	.14*	.28	.20	.15**	.27*
	Age 4-9 to 5-4 (N=214)	.37*	.34	.30	.40**	.48*
	Inventory: Language					
	Age 4-1 to 4-8	.32**	.17	.11**	.29**	.34**
	Age 4-9 to 5-4	.59**	.33	.37**	.60**	.70**
	MPSI					
	Age 4-1 to 4-8	.67	.31	.42	.43**	.68**
	Age 4-9 to 5-4	.73	.45	.42	.69**	.81**
By birth order	Inventory: Adaptive beh.					
	Oldest sibs (N=187)	.35*	.31	.23	.33	.41
	Younger sibs (N=204)	.15*	.30	.29	.25	.36
	Inventory: Language					
	Oldest sibs	.57**	.32*	.32	.55	.62*
	Younger sibs	.37**	.13*	.16	.40	.47*
	MPSI					
	Oldest sibs	.77**	.47*	.49**	.65**	.82**
	Younger sibs	.57**	.25*	.26**	.44**	.62**

*$p < .05$
**$p < .01$